

In the Claims

1. A method of making a carbon foam material comprising
providing a carbon foam precursor,
heating said carbon foam precursor to remove a portion of the
volatiles therefrom and create a partially devolatilized precursor extract,
effecting said heating in an inert gas environment in a sealed
vessel,
cooling said devolatilized coal extract,
converting said devolatilized extract into a powder,
introducing said powder into a sealed vessel,
foaming said devolatilized coal extract in said vessel by
heating it at a pressure of less than about 20 atmospheres, and
cooling said foamed material.
2. The method of claim 1 including
effecting said foaming in an inert gas environment.
3. The method of claim 1 including
effecting said partial devolatilization under an inert gas
environment.
4. The method of claim 1 including
effecting said foaming under an inert gas environment.
5. The method of claim 1 including
effecting said foaming at a pressure of about 0.5 to 1.5
atmospheres.
6. The method of claim 5 including
effecting said foaming at a temperature of about 330° to 600°
for about 1 minute to 6 hours.
7. The method of claim 6 including
effecting said heating to devolatilize said carbon foam
precursor to a temperature of about 100° to 720°C.
8. The method of claim 6 including

creating said devolatilized carbon foam precursor powder with a size of about 10 to 325 mesh.

9. The method of claim 1 including effecting by said partial devolatilization of said carbon foam precursor alteration of the fluid nature of the matrix of said heated carbon foam precursor.

10. The method of claim 1 including employing bituminous coal as said carbon foam precursor.

11. The method of claim 1 including employing coal extract as said carbon foam precursor.

12. The method of claim 11 including employing a material selected from the group consisting of de-ashed coal extract and un-ashed coal extract as said carbon foam precursor.

13. The method of claim 1 including employing mesophase pitch as said carbon foam precursor.

14. The method of claim 1 including employing petroleum based pitch as said carbon foam precursor.

15. The method of claim 1 including effecting by said partial devolatilization removal of a portion of the internal blowing agent from said carbon foam precursor.

16. The method of claim 1 including after said partial devolatilization, but before said foaming, storing said devolatilized powder.

17. The method of claim 1 including after said devolatilizing, but before said foaming, oxidizing said powder.

18. The method of claim 3 including employing stagnant inert gas as said inert gas environment.

19. The method of claim 3 including

employing flowing inert gas as said inert gas environment.

20. The method of claim 4 including employing stagnant inert gas as said inert gas environment.

21. The method of claim 4 including employing flowing inert gas as said inert gas environment.

22. A method of making a carbon foam material comprising providing a carbon foam precursor, creating a powder of said precursor, heating said powdered carbon foam precursor at a pressure of

about 0.5 to 1.5 atmospheres at a temperature of about 20° C to 500°C for about 1 minute to 72 hours to effect oxidation thereof,

heating said oxidized carbon foam precursor in an inert gas environment at a pressure less than 20 atmospheres to a temperature of about 330°C to 600°C to foam said powdered precursor, and

cooling said foam to room temperatures.

23. The method of claim 22 including effecting said foaming in an inert gas environment.

24. The method of claim 22 including employing bituminous coal as said carbon foam precursor.

25. The method of claim 22 including employing coal extract as said carbon foam precursor.

26. The method of claim 22 including employing a material selected from the group consisting of de-ashed coal extract and un-ashed coal extract as said carbon foam precursor.

27. The method of claim 22 including employing hydrogenated coal extract as said carbon foam precursor.

28. The method of claim 22 including employing hydrogenated coal extract as said carbon foam precursor.

29. The method of claim 22 including employing mesophase pitch as said carbon foam precursor.
30. The method of claim 22 including employing petroleum based pitch as said carbon foam precursor.
31. The method of claim 22 including effecting said carbon foam precursor oxidation in the presence of at least one material selected from the group consisting of water and steam.
32. The method of claim 22 including devolatilizing said precursor prior to said oxidation.
33. The method of claim 22 including creating said precursor powder in the range of about 10 to 325 mesh.
34. The method of claim 22 including after said oxidation, but prior to said foaming, storing said oxidized precursor.
35. The method of claim 22 including effecting said foaming at a pressure of about 0.5 to 1.5 atmospheres.